(12) UK Patent Application (19) GB (11) 2 227 709 (13) A

(43) Date of A publication 08.08.1990

(21) Application No 8830404.3

(22) Date of filing 30.12.1988

(51) INT CL[5]
B31B 39/00 21/00

(52) UK CL (Edition K)
B5D DSS5

(56) Documents cited
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(58) Field of search
UK CL (Edition J) B5D DSB5 DSB7 DSS3 DSS5
INT CL[4] B31B

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(54) Method of forming a bag

(57) A method of making a bag (22) comprising providing a first sheet (10), e.g. of PVC, having spaced lateral edges (18, 20) for forming an outer bag, providing a second sheet (14), e.g. of PVC, having spaced lateral edges (18, 20) for forming an inner bag, forming an assembly comprising the second sheet disposed on the first sheet, folding the assembly about a central axis (21) normal to edges (18, 20) to bring the lateral edges of the folded part of the sheets into alignment with the lateral edges of the remainder of the sheets, bonding e.g. heat sealing the aligned lateral edges to form a bag having a first face (30) corresponding to the folded part of the assembly, a second face (32) corresponding to the remainder of the assembly, side edges (24, 26) corresponding to the lateral edges, a closed bottom edge (29) and an open upper edge (28). An insulation layer 12 comprising one or two sheets may be provided between sheets (10, 14). Plastics handles (34, 36) may be heat-sealed to the sheets (10 and/or 14) at the open edge.

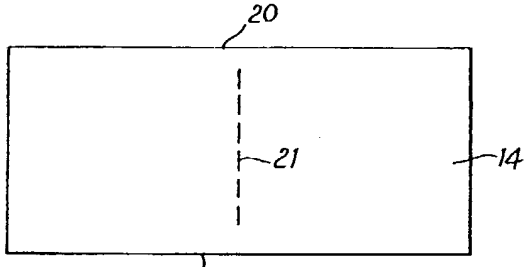

Fig. 2

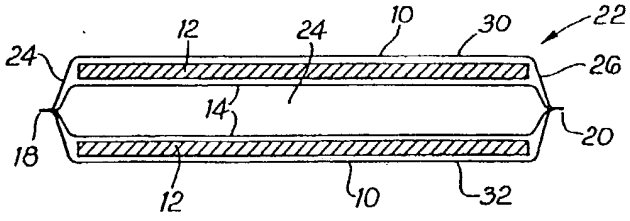

Fig. 4

At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

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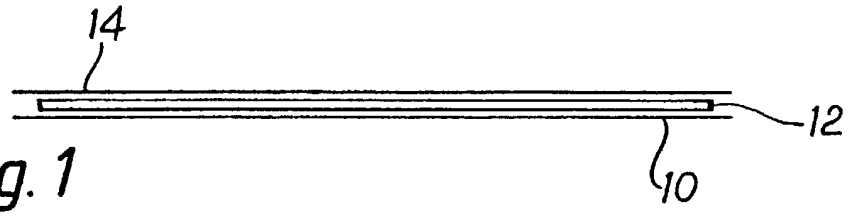


Fig. 1

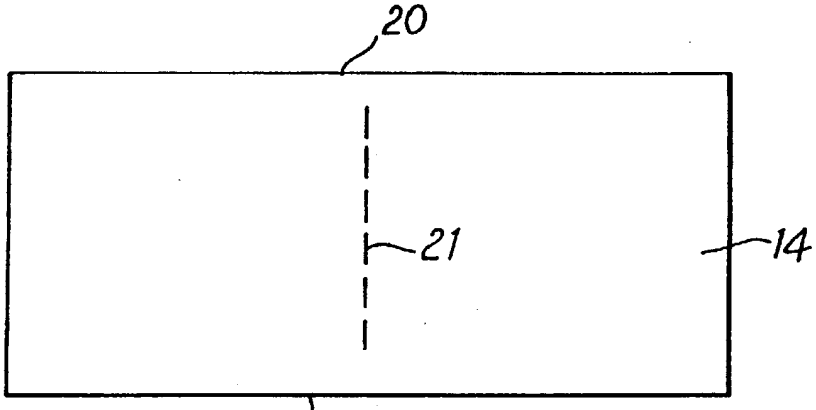


Fig. 2

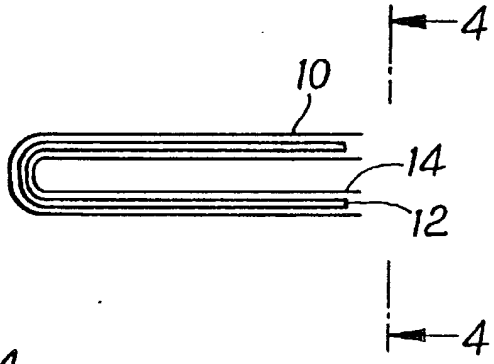
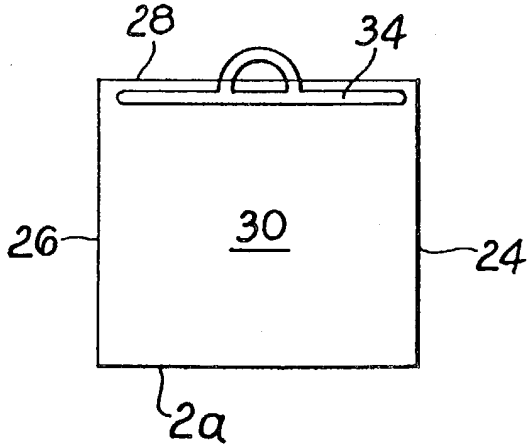


Fig. 3



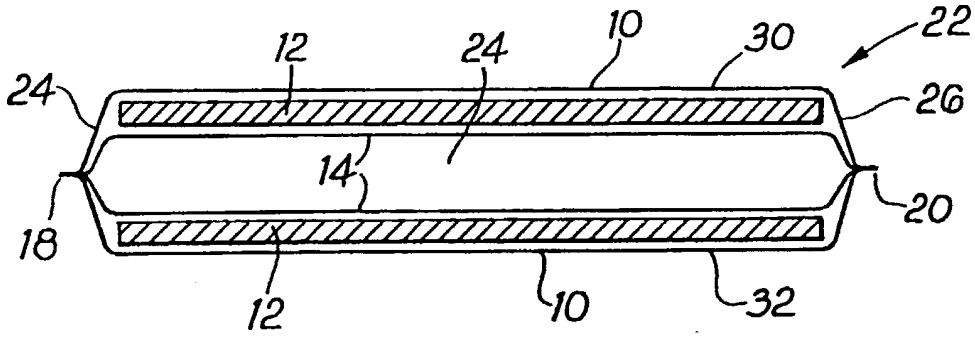


Fig. 4

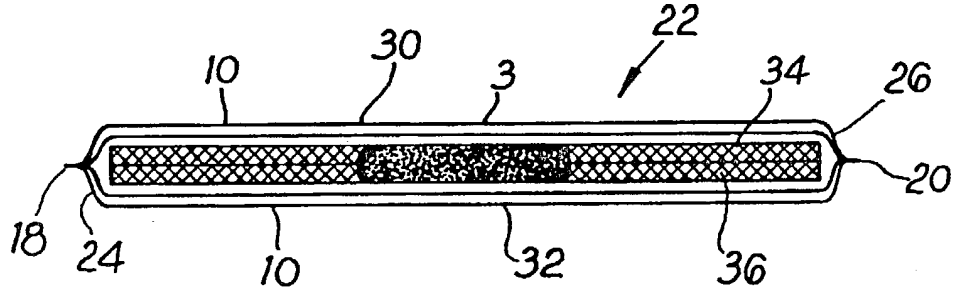


Fig. 5

METHOD OF FORMING A BAG

This invention relates to a method of forming a bag, and more particularly relates to a method of forming a bag having a multilayer structure.

Bags with heat insulation properties have been known for some time. Such bags are available through retail outlets such as supermarkets and can be used to carry frozen food from the supermarket to the home. The heat insulation properties of the bag helps to prevent the frozen food from defrosting during transportation.

The structure of this type of bag comprises the following features: an outer bag of plastics material; an insulating bag of a heat insulating material; an inner bag of plastics material; and a plastics handle disposed at the open end of the bag.

The method of making this type of bag is as follows. First, the outer bag, the inner bag and the insulating bag are all manufactured separately. Second, the insulating bag is inserted in the outer bag. Third, the inner bag is disposed in the insulating bag. Fourth, the margins of the bag at the open end thereof are turned

outwardly back on themselves. And fifth. the plastics handle is heat-sealed to the bag between the margins and the rest of the bag. In practice the finished bag would be substantially rectangular with two faces. and one of the handles would be provided along each face of the bag.

The above method involves a large number of steps and for this reason is not especially economical.

It is an object of the present invention to provide an improved method of making a bag.

According to the present invention there is provided a method of making a bag comprising providing a first sheet of material having spaced lateral edges for forming an outer bag, providing a second sheet of material having spaced lateral edges for forming an inner bag, forming an assembly comprising the second sheet disposed on the first sheet. folding the assembly about an axis to bring the lateral edges of the folded part of the sheets into alignment with the lateral edges of the remainder of the sheets, bonding the folded parts of the sheets to the remainder of the sheets substantially along said lateral edges to form a bag having a first face corresponding to the folded part of the assembly, a second face

corresponding to the remainder of the assembly, side edges corresponding to the lateral edges, a closed bottom edge and an open upper edge.

Advantageously an insulation layer is provided between the inner layer and the outer layer.

In one embodiment the insulation layer may comprise two sheets of insulation material, and each sheets of insulation material may be inserted between the inner and outer layers of a respective face of the bag.

However, in the preferred embodiment a sheet of insulation material is provided which is disposed between the first and second sheets during formation of the assembly.

In a further advantageous construction a handle is bonded to at least part of the upper edge of the bag. It is preferred that one handle is bonded to the upper edge of the first face of the bag and another handle is bonded to the upper edge of the second face of the bag; at the same time the first and second sheets of the upper edges of the first and second faces of the bag may be bonded together.

It is desirable that all the components of the bag are plastics, so that heat-sealing can be used to perform the bonding.

Reference is now made to the accompanying drawings, in which:-

Figure 1 is a cross-sectional view of an assembly for use in the method according to the invention;

Figure 2 is a plan view of the assembly shown in Figure 1;

Figure 3 is a cross-sectional view of the assembly shown in Figure 1 after it has been folded;

Figure 4 is a cross-sectional view of the folded assembly shown in Figure 3 after the edges have been bonded, and looking in the direction of arrows 4-4;

Figure 5 is a cross-sectional view corresponding to that shown in Figure 4 after handles have been attached; and

Figure 6 is a side elevation of a bag made by the method according to the invention.

Referring to Figures 1 and 2, a first step in the method of forming a bag according to the invention comprises forming an assembly of a first PVC sheet 10, which underlies an insulation sheet 12, which underlies a second PVC sheet 14. In the drawings gaps are shown between the sheets in order to improve the clarity; in practice such gaps would not be present.

The sheets 10, 12 and 14 are all substantially rectangular and each have lateral edges 18 and 20 which extend substantially parallel to one another. The insulation sheet 12 is thicker, slightly shorter and slightly narrower than the sheets 10 and 14.

The sheets 10, 12 and 14 are subsequently folded about an axis 21 which extends substantially normal to the lateral edges 18 and 20 and which is positioned approximately midway along the length of the sheets 10 and 14. This folding step produces the arrangement shown in Figure 3.

The next step is to heat-seal all the lateral edges 18 to one another, and to heat seal all the lateral edges 20 to one another, as shown in Figure 4. This produces a bag 22 having side edges 24 and 26, an open upper edge 28, a closed bottom edge 29 opposite to the upper edge 28, a first face 30 and a second face 32.

The next step involves heat-sealing a plastics handle 34 to the second sheet 14 along the part corresponding to the first face 30 of the bag 22 along the upper edge 28 thereof. Simultaneously the first sheet 10 is bonded to the second sheet 14 along the same part.

Another plastics handle 36 is heat-sealed to the second sheet 14 along the part corresponding to the second face 32 of the bag 22 and along the upper edges 28 thereof. Simultaneously the first sheet 10 is bonded to the second sheet 14 along the same part.

The handles 34 and 36 can be provided with cooperating formations (not shown) to enable then to be secured to one another to seal the open end of the bag 22 when food is stored therein.

It will be appreciated that the handles 34 and 36 can instead be bonded to the first sheet 10, or even can be inserted between the sheets 10 and 14 and bonded to both sheets.

The method according to the invention provides a simple and economical way of producing an insulating bag comprising an inner bag and an outer bag, an insulation material disposed therein.

CLAIMS

1. A method of making a bag comprising providing a first sheet of material having spaced lateral edges for forming an outer bag, providing a second sheet of material having spaced lateral edges for forming an inner bag, forming an assembly comprising the second sheet disposed on the first sheet, folding the assembly about an axis to bring the lateral edges of the folded part of the sheets into alignment with the lateral edges of the remainder of the sheets, bonding the folded parts of the sheets to the remainder of the sheets substantially along said lateral edges to form a bag having a first face corresponding to the folded part of the assembly, a second face corresponding to the remainder of the assembly; side edges corresponding to the lateral edges, a closed bottom edge and an open upper edge.

2. A method according to Claim 1, wherein an insulation layer is provided between the inner and outer layer.

3. A method according to Claim 2, wherein the insulation layer comprises two sheets of insulation material, and each sheet is inserted between the first and second sheets of a respective face of the bag after the lateral edges have been bonded.

4. A method according to Claim 2, wherein a sheet of insulation material is provided which is disposed between the first and second sheets during formation of the assembly.

5. A method according to any preceding claim, wherein a handle is bonded to at least part of the upper edge of the bag.

6. A method according to any of Claims 1 to 4, wherein a handle is bonded to the upper edge of the first face of the bag, and another handle is bonded to the upper edge of a second face of the bag.

7. A method according to Claim 6, wherein the upper edges of the first and second sheets of the first face of the bag are bonded to one another at the same time as the first handle is bonded thereto.

8. A method according to Claim 6 or 7 wherein the upper edges of the first and second sheets of the second face of the bag are bonded to one another at the same time as the second handle is bonded thereto.

9. A method according to any preceding claim, wherein said bonding step comprises heat-sealing.

10. A method of forming a bag substantially as herein described, with reference to and as shown in the accompanying drawings.

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